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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,735	08/04/2006	Mohamed Takhim	66345-040-7	8372

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EXAMINER

COHEN, STEFANIE J

ART UNIT	PAPER NUMBER
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4162

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10/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,735	Applicant(s) TAKHIM, MOHAMED	
	Examiner STEFANIE COHEN	Art Unit 4162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/10/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/9/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 3 recites the broad recitation "P2O5 content of between 30% and 50% by weight", and the claim also

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recites “preferably between 35 and 40% by weight” which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holcomb et al (4435370) in view of Hauge (3919395). Holcomb teaches preparation of monocalcium phosphate from phosphate rock. Holcomb, col. 7 lines 5-10, teaches an initial step of the preparation, phosphate rock of any origin is acidulated with a solution of phosphoric acid. It would have been obvious to one of ordinary skill in the art at the time of the invention to add water to the acidulated phosphate rock to obtain a specific concentration or density. Holcomb, col. 7 lines 49-51, teaches the product resulting from the reaction of the phosphoric acid and the phosphate rock has a relatively low concentration of suspended solids. The product, which consists of solution of monocalcium phosphate and phosphoric acid, is passed to a suitable separation device such

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as a decanter for the separation of the solids. Holcomb, col. 10 lines 54-65, teaches an alkali metal such as NaOH may be added to produce any insoluble alkali metal fluosilicates in the system. Although Holcomb teaches a step of adding an alkali metal such as NaOH to the system to produce any insoluble alkali metal fluosilicates, Holcomb does not teach the precipitation or isolating of a water-insoluble calcium phosphate. Hauge, col. 6 lines 50-65, teaches a process for extraction of phosphorus compounds. Hauge teaches a first precipitate milk $\text{Ca}(\text{OH})_2$ was added to a phosphate solution. This caused precipitation of the impurities in the solution. The purified filtrate was treated further with $\text{Ca}(\text{OH})_2$ which raised the pH and caused the precipitation of substantially all of the phosphate values as calcium phosphate (principally calcium hydrogen phosphate). The precipitated calcium phosphate was separated by filtration. It would have been obvious to one of ordinary skill in the art at the time of the invention to further increase the pH as taught by Hauge to the solution of the monocalcium phosphate and phosphoric acid product as taught by Holcomb with to allow the dicalcium phosphate to precipitate and come out of solution.

Regarding claim 2, it would have been obvious to one of ordinary skill in the art at the time of the invention to dry the TSP composition before adding water to analyze the initial TSP composition or for easy storage before use.

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Regarding claim 3, Holcomb, col. 7 lines 29-31, teaches the P₂O₅ content of the phosphoric acid should range from about 25-55%

Regarding claims 4 and 13-14, Holcomb, example 1, teaches phosphate rock was reacted with phosphoric acid for an acid/ rock weight ratio of 8/1. It would have been obvious to one of ordinary skill in the art at the time of the invention be obvious to optimize the pH by optimizing the quantity of phosphoric acid in the reaction to ensure the reaction mixture provides enough excess phosphoric acid to dissolve essentially all of the calcium in the phosphate rock as monocalcium phosphate.

Regarding claims 5 and 15, Holcomb, example 1, teaches the initial reaction mixture to have a P₂O₅/ CaO weight ratio around 6.75 to 1 which is around a Ca/P molar ratio of .3. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the Ca/P molar ratio by optimizing the quantity of phosphoric acid to ensure there is enough phosphoric acid to dissolve essentially all of the calcium in the phosphate rock.

Regarding claim 6, Hauge, col. 2 lines 55-56, teaches the process for treating low purity phosphate rock can be done at room temperature. It would also have been obvious to one of ordinary skill in the art that this process could further be done at ambient pressure so no specialized equipment is needed. It would have

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been obvious to one of ordinary skill in the art at the time of the invention to increase or decrease the temperature or pressure to obtain a faster reaction.

Regarding claim 7, although Hauge teaches using $\text{Ca}(\text{OH})_2$ to precipitate the dicalcium phosphate, it would have been obvious to one of ordinary skill in the art at the time of the invention other strong bases can be used such as K ions in KOH or Na ions NaOH as taught by Holcomb as long as the strong base has the ability to precipitate the dicalcium phosphate.

Regarding claim 8, Holcomb, col. 7 lines 49-51, teaches the product resulting from the initial reaction comprises a relatively low concentration of suspended solids in the solution of monocalcium phosphate and phosphoric acid. Hauge, col. 6 lines 49-51, teaches a purified filtrate was treated with $\text{Ca}(\text{OH})_2$ which caused precipitation of substantially all of the phosphate values as calcium phosphate principally calcium hydrogen phosphate.

Regarding claims 9 and 16-17, Hauge, col. 6 lines 56, teaches the purified filtrate was treated with $(\text{Ca})\text{OH}_2$ which raised the pH to 3.5. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the pH of the liquid phase to allow the maximum amount of dicalcium phosphate to precipitate with a minimal amount of impurities precipitating.

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Regarding claims 10 and 18, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the Na/P ratio to obtain a precipitate with little impurities.

Regarding claim 11, the molar ratio between sodium monohydrogen phosphate and sodium dihydrogen phosphate is an inherent characteristic of this process depending on quantities of phosphoric rock, phosphoric acid and a strong base that are added to the process.

Regarding claim 12, Hauge, col. 1 lines 32-34, discloses a wet process in which phosphate rock is treated with an acid to release phosphoric acid and precipitates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is (571)270-5836. The examiner can normally be reached on Monday-Friday, 8:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

sc

/Jennifer McNeil/
Supervisory Patent Examiner, Art Unit 4162